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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,586	11/12/2003	Hung-Sui Lin	JCLA7856-D	8993

7590

04/28/2004

J.C. Patents
4 Venture, Suite 250
Irvine, CA 92618

EXAMINER

HO, HOAI V

ART UNIT PAPER NUMBER

2818

DATE MAILED: 04/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/712,586	LIN ET AL.	
	Examiner	Art Unit	
	Hoai V. Ho	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 10/035,514.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. This office acknowledges receipt of the following items from the Applicant:

Applicant claimed for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 10/035,514.

2. Claims 1-3 are presented for examination.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable Wang et al. U. S. Patent No. 6331952.

As per claim 1, Figures 5 and 6 of Wang are directed to an erasing method for a p-channel nitride read only memory, wherein the p channel nitride read only memory has a control gate (24), a drain (16) and a source (14) and formed in a n-well, the erasing method comprising applying a positive voltage to the control gate (negative voltage pulse, col. 12, lines 12-26 instead) and a negative voltage (7-10V, col. 12, lines 23 and 24 instead) to the drain, floating the source (floating, col. 12, line 25); and grounding the n-well (ground).

Wang discloses the n-channel nitride read only memory (NROM) with the negative voltage to the control gate and the positive voltage to the drain instead of applying the positive

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voltage to the control gate and the negative voltage to the drain of the p-channel NROM with the n-well as the claimed invention.

Wang, starting at column 1, line 51 to column 2, line 6, discloses that the NROM cell is erased by applying a negative voltage to the gate and a positive bias on the drain causing the negative bias between the gate and the drain. Therefore, it would have been obvious to a person of ordinary skill in the art at the time invention was made would have found it obvious to use either a method of applying the negative voltage to the control gate and the positive voltage to the drain of the n-channel NROM as Wang's invention or the method of applying the positive voltage to the control gate and the negative voltage to the drain of the p-channel NROM as the claimed invention, since it has been held that these two methods would perform the same functions such as to erase the NROM cell.

As per claim 2, Wang, starting at column 2, lines 3 and 4, discloses wherein a voltage difference between the positive voltage applied to the control gate and the negative voltage to the drain is sufficient to trigger a band-to-band induced hot electron injection to erase the p-channel nitride read only memory.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable Wang et al. U. S. Patent No. 6331952 in view of Chi U. S. Patent No. 6288943.

Wang fails to disclose wherein the voltage difference is not sufficient to open a channel of the p-channel nitride read only memory. However, Figure 17 of Chi discloses that the voltage difference is not sufficient to open a channel of the p-channel nitride read only memory in column 1, lines 46-53 and column 6, lines 17-26. It would have been obvious to a person of ordinary skill in the art at the time invention was made to modify Wang's NROM which utilizes

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the channel of the p-channel NROM is not open during the erasing operation as taught by Chin. Because Chi suggests that the combination of voltages applied to the control gate, the source, the drain and the well will drive the electron charge stored out through the source or drain (col. 1, lines 46-53 and col. 6, lines 24-26). Also see Wang col. 12, lines 31-52 for an advantage between a floating gate and a trapping region such as a nitride layer.


6. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

7. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see MPEP 710.02 (b)).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to whose telephone number is (571) 272-1777. Other inquiries of this application should be called to (571) 272-1562 or the fax number (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


H. Ho
March 23, 2004


Hoai V. Ho
Primary Examiner
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